

ENVIRONMENTALLY FRIENDLY PESTICIDE-FERTILIZER FORMULATIONS

(ROK/5/032) D5 New

MODEL PROJECT

CORE FINANCING

| YEAR | Experts | | Group Activity | Equipment | Fellowships | | Scientific Visits | | Group Training | Sub-Contracts | Misc. Comp. | TOTAL |
|------|---------|--------|----------------|-----------|-------------|--------|-------------------|--------|----------------|---------------|-------------|--------|
| | m/d | US \$ | US \$ | US \$ | m/d | US \$ | m/d | US \$ | US \$ | US \$ | US \$ | US \$ |
| 1999 | 0/28 | 13,720 | 0 | 0 | 7/0 | 24,150 | 0/28 | 10,080 | 0 | 0 | 0 | 47,950 |
| 2000 | 1/26 | 28,840 | 0 | 0 | 9/0 | 32,400 | 0/28 | 10,640 | 0 | 0 | 0 | 71,880 |

First Year Approved: 1999

OBJECTIVES: To upgrade the preparation of controlled release (CR) formulations of mixtures of pesticides and fertilizer in the framework of sustainable agriculture.

BACKGROUND: In the Republic of Korea, pesticides and fertilizers are intensively used during the crop growing season to increase production and protect plants against pests and disease. For example, the rice crop requires up to eight applications of pesticides for protection against the pest outbreaks due to warm and humid conditions. Similarly, in order to assure high yields of rice, fertilizers are scheduled to be used 3-4 times during the growing season (before seedling transplantation, at tillering, and at ripening stage) but because of scarcity of farm labour, they cannot be applied when needed, and go to waste. The National Institute of Agricultural Science and Technology (NIAST) is working to develop CR formulations of pesticides and fertilizers, which are released from the matrix at a predetermined and controlled rate and reach the target at the required time and in appropriate dosage. Additional advantages of the CR formulations include low toxicity, uniform application, reduced degradation, fewer applications, better targeting, and the possibility of prolonging effects. This Model Project will evaluate the technical problems related to the stability of pesticides in the formulations, their stability during storage, packaging and transportation, and the efficacy of the formulated products, and then transfer the technology to commercial manufacturers for industrial production.

PROJECT PLAN: NIAST has recently developed the technology to combine the pesticides and fertilizers into one formulation by using the latter as pesticide carrier materials, and plans to conduct a national task-forced development project, in collaboration with the relevant pesticide and fertilizer factories, to solve some remaining technical problems. The test mixtures will be field tested prior to scale-up for mass production, and their environmental fate will be studied. Finally, the mixtures will be registered and the product distributed to the farmers. This Model Project will evaluate the technical problems related to the stability of pesticides in the formulations, their stability during storage, packaging and transportation, and the efficacy of the formulated products, and then transfer the technology to commercial manufacturers for industrial production.

NATIONAL COMMITMENT: All local costs, including equipment and chemicals.

AGENCY INPUT: Expert services, fellowships and scientific visits in the technical areas related to developing CR formulations.

PROJECT IMPACT: The use of CR formulations of the mixtures of pesticides and fertilizers will lead to a 50-70% decrease in the frequency of pesticide application and an overall reduction in the use of chemicals per unit of arable land, and thus result in considerable savings for farmers. This technology may also find regional interest and could be incorporated into a future regional project for South East Asia, in collaboration with UNDP and FAO.